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Verve LLC  
v.  
Crane Cams Inc.

U.S. Court of Appeals Federal Circuit

No. 01-1417

Decided November 14, 2002

**PATENTS**

**[1] Patentability/Validity -- Specification -- Claim adequacy (§ 115.1109)**

**Patent construction -- Claims -- Defining terms (§ 125.1305)**

Resolution of any ambiguity arising from claims and specification may be aided by extrinsic evidence of usage and meaning of term in context of invention, since reference to intrinsic evidence is primary in interpreting claims, but proper criterion for claim construction is meaning of words as they would be understood by persons in field of invention, since patent documents are written for persons familiar with relevant field, and patentee need not include in specification information readily understood by practitioners, and since fact that parties disagree about scope of claim does not of itself render claim invalid.

**[2] Patentability/Validity -- Specification -- Claim adequacy (§ 115.1109)**

Claims for automotive push rod, which require that rod have "substantially constant wall thickness," are not rendered indefinite by use of term "substantially," since terms such as "substantially" are used in patents when warranted by nature of invention, in order to accommodate minor variations that may be appropriate to secure invention, since such usage may satisfy duty to "particularly point out and distinctly claim" invention as required by 35 U.S.C. § 112, and may be necessary in order to provide inventor with full benefit of invention, since "substantially" is not indefinite if it serves to reasonably describe subject matter so that its scope would be understood by persons in field of invention, and to distinguish claimed subject matter from prior art, and since understanding of this scope may be derived from extrinsic evidence without rendering claims invalid.

**[3] Patentability/Validity -- Anticipation -- Identity of elements (§ 115.0704)**

Japanese patents for automotive push rods do not anticipate invention of patent in suit, since Japanese patents show push rods that are of uniform diameter along their length, with spherical shaped ends, whereas claims at issue require middle portion of rod to have larger outer diameter than its end portions, and since invention described and claimed in patent in suit does not encompass tube that has uniform diameter along its length, whatever diameter its spherical ends may have.

**PATENTS**

**Particular patents -- General and mechanical -- Automotive push rod**

4,850,315, Mallas, push rod, summary judgment of judgment of invalidity for indefiniteness vacated; summary judgment of invalidity for anticipation reversed.

Appeal from the U.S. District Court for the Eastern District of Michigan, Tarnow, J.; 60 USPQ2d 1219.

Action by Verve LLC against Crane Cams Inc., Crower Cams & Equipment Co. Inc., Trend Products Inc., Competition Cams Inc., and Manton Racing Products for patent infringement. Plaintiff appeals from grant of summary judgment of patent invalidity on grounds of indefiniteness and anticipation. Summary judgment of indefiniteness vacated and remanded; summary judgment of anticipation reversed.

John A. Artz, John S. Artz, and Robert P. Renke, of Artz & Artz, Southfield, Mich., for plaintiff-appellant.

Geoffrey R. Myers, of Hall, Priddy, Myers & Vande Sande, Potomac, Md.; James E. Wynne, of Butzel Long, Detroit, Mich., for defendants-appellees.

Before Newman, Lourie, and Clevenger, circuit judges.

Newman, J.

Verve, LLC, appeals the decision of the United States District Court for the Eastern District of

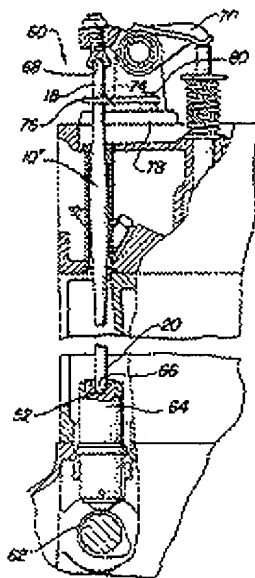
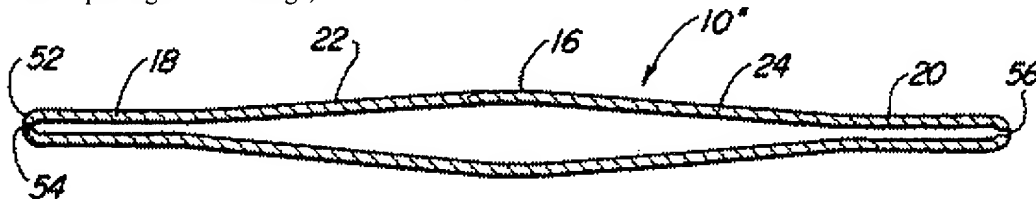
Michigan, [FN1] granting summary judgment that claims 1, 6, and 13 of United States Patent No. 4,850,315 (the '315 patent') are invalid. We reverse the judgment with respect to anticipation, vacate with respect to indefiniteness, and remand for further proceedings.

## BACKGROUND

The '315 patent' describes and claims improved push rods for internal combustion engines. Push rods are used to actuate rocker arms which open and close the intake and exhaust valves of cylinders of engines designed for their use. In such engines the push rods ride on cam followers, which are raised and lowered by the camshaft as it rotates. As engine speeds have increased so have the number of piston strokes, requiring a corresponding increase in the number of valve openings and closings; this in turn increases the

movement of and forces on the push rods. Stronger \*1053 push rods became necessary and, to lighten their weight, hollow push rods were developed. However, there was a need for stronger and stiffer rods that could be manufactured from a single piece of metal without the need for inserts or other supporting structure.

The '315 patent' claims a hollow push rod whose overall diameter is larger at the middle than at the ends and that has **substantially** constant wall thickness throughout the rod, and rounded seats at the tips. This novel shape is said to provide the advantages of increased strength and stiffness, permitting higher engine speeds and greater valve train forces. The '315 patent' illustrates the invention as follows:



As seen in the drawings and as required by the claims, the push rod 10 is configured whereby the outer diameter of the middle portion is larger than the outer diameter of the end portions 18 and 20. The end portions have a rounded tip 52 forming a seat, that engages a pocket of a cam follower at one end and a pocket of a rocker arm at the other end. The shape of

the push rod provides increased strength, and because it is hollow it is relatively light. Since the rounded tips are integrally formed, there are no problems with disengagement and the rod is relatively inexpensive to manufacture. Claim 1 is representative:

1. A push rod for an internal combustion engine

comprising:

a single piece of metal in the form of an elongated hollow tube having a middle portion, first and second end portions and rounded seats at the tips thereof,

said middle portion having a larger outer diameter than the end portions,

and said tube having **substantially** constant wall thickness throughout the length of the tube and the tips thereon.

#### INDEFINITENESS

The district court found that the expression "**substantially** constant wall thickness" in the claims is not supported in the specification and prosecution history by a sufficiently clear definition of "**substantially**." The court explained:

In this case, judging by the intrinsic record, the meaning of "**substantially**" constant wall thickness is unclear. While not the basis of this court's decision, the ambiguity of this term was demonstrated at the motion hearing by the plaintiff's willingness to include great variations in wall thickness within the parameters of "**substantially**" constant wall thickness in a manner that renders them without meaning. Amgen, Inc. v. Chugai Pharmaceutical Co., 927 F.2d 1200, 1218, 18 USPQ2d 1016, 1031 (Fed. Cir. 1991), for its statement that "When the meaning of claims is in doubt, especially when, as is the case here, there is close prior art, they are properly declared invalid."

[1] We conclude that the court erred in law, in requiring that the intrinsic evidence of the specification and prosecution history is the sole source of meaning of words that are used in a technologic context. While reference to intrinsic evidence is primary in interpreting claims, the criterion is the meaning of words as they would be understood by persons in the field of the invention. Patent documents are written for persons familiar with the relevant field; the patentee is not required to include in the specification information readily understood \*1054 by practitioners, lest every patent be required to be written as a comprehensive tutorial and treatise for the generalist, instead of a concise statement for persons in the field. Thus resolution of any ambiguity arising from the claims and specification may be aided by extrinsic evidence of usage and meaning of a term in the

context of the invention. The question is not whether the word "**substantially**" has a fixed meaning as applied to "constant wall thickness," but how the phrase would be understood by persons experienced in this field of mechanics, upon reading the patent documents. It may of course occur that persons experienced in a technologic field will have divergent opinions as to the meaning of a term, particularly as narrow distinctions are drawn by the parties or warranted by the technology. Patent disputes often raise close questions requiring refinement of technical definitions in light of particular facts. The judge will then be obliged to decide between contending positions; a role familiar to judges. But the fact that the parties disagree about claim scope does not of itself render the claim invalid.

[2] Expressions such as "**substantially**" are used in patent documents when warranted by the nature of the invention, in order to accommodate the minor variations that may be appropriate to secure the invention. Such usage may well satisfy the charge to "particularly point out and distinctly claim" the invention, 35 U.S.C. § 112, and indeed may be necessary in order to provide the inventor with the benefit of his invention. In Andrew Corp. v. Gabriel Elecs. Inc., 847 F.2d 819, 821-22, 6 USPQ2d 2010, 2013 (Fed. Cir. 1988) the court explained that usages such as "**substantially** equal" and "closely approximate" may serve to describe the invention with precision appropriate to the technology and without intruding on the prior art. The court again explained in Ecolab Inc. v. Envirochem, Inc., 264 F.3d 1358, 1367, 60 USPQ2d 1173, 1179 (Fed. Cir. 2001) that "like the term 'about,' the term '**substantially**' is a descriptive term commonly used in patent claims to 'avoid a strict numerical boundary to the specified parameter,'" quoting Pall Corp. v. Micron Separations, Inc., 66 F.3d 1211, 1217, 36 USPQ2d 1225, 1229 (Fed. Cir. 1995).

It is well established that when the term "**substantially**" serves reasonably to describe the subject matter so that its scope would be understood by persons in the field of the invention, and to distinguish the claimed subject matter from the prior art, it is not indefinite. Understanding of this scope may be derived from extrinsic evidence without rendering the claim invalid. The summary judgment record offered no basis for departing from these general rules. Thus the usage "**substantially** constant wall thickness" does not of itself render the claims of the '315 patent indefinite. The summary judgment on

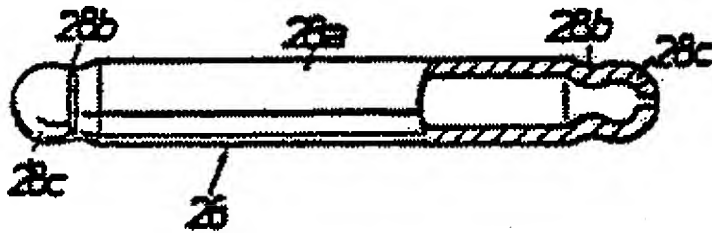
this ground is vacated; we remand for further proceedings, including any appropriate recourse to extrinsic evidence concerning the usage and understanding of the term "substantially" in relevant context.

#### ANTICIPATION

Invalidity based on "anticipation" requires that the invention is not in fact new. See, e.g., Hoover Group, Inc. v. Custom Metalcraft, Inc., 66 F.3d 299, 302, 36 USPQ2d 1101, 1103 (Fed. Cir. 1995) ("lack of novelty (often called 'anticipation') requires that the same invention, including each element and limitation of the claims, was known or used by others before it was invented by the patentee"). A single reference must describe the claimed invention with

sufficient precision and detail to establish that the subject matter existed in the prior art. See, e.g., In re Spada, 911 F.2d 705, 708, 15 USPQ2d 1655, 1657 (Fed. Cir. 1990) ("the reference must describe the applicant's claimed invention sufficiently to have placed a person of ordinary skill in the field of the invention in possession of it").

The district court also held on summary judgment that the '315 invention was invalid for anticipation, based on the push rods shown in two Japanese patents designated JP 635 and JP 808. The Japanese patents show push rods that are hollow tubes with spherical shaped ends, as follows:



[3] Verve stresses that the Japanese push rods are not wider at their mid-portion like the '315 rods, but are of uniform diameter along their length. The drawings in the Japanese patents and the '315 patent reflect this distinguishing difference. Although the defendants \*1055 argue that the ball shape at the end of the Japanese rods is of narrower diameter than the rest of the rod and thus that the Japanese end portion is narrower than the middle portion, the invention as described and claimed in the '315 patent does not encompass a tube of uniform diameter along its length, whatever the diameter at the rounded tip.

The Japanese patents on their face do not show the push rods of the '315 patent. No question of material fact is present, for neither the structures, nor their differences, is disputed. On the undisputed facts, no reasonable trier of fact could find the '315 invention anticipated by these Japanese references. Summary judgment of invalidity on the ground of anticipation is reversed.

#### CONCLUSION

The summary judgment of invalidity insofar as based on anticipation is reversed. The judgment of invalidity insofar as based on indefiniteness is

vacated. No other issues were decided by the district court. The case is remanded for further proceedings.

REVERSED IN PART, VACATED IN PART,  
AND REMANDED

FN1. Verve, LLC v. Crane Cams, Inc., 145 F.Supp.2d 862,60 USPQ2d 1219 (E.D. Mich. 2001).

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